

Annual Report for Smith-Lever Funded Projects

Project Title: Improved NEWA Vegetable Models
Principal Investigator: Abby J. Seaman
Project Start: 10/1/2013 **Project Term:** 9/30/2016
Report Fiscal Year: 2015

Plan of Work Area(s): General Production Practices
Agricultural Environmental Management
Climate Change and Producers/Organizations/Businesses

Executive Summary: Weather based pest forecast models are important tools for IPM implementation. The Network for Environmental and Weather Applications (NEWA) (<http://newa.cornell.edu>) provides forecasts for important pests of fruits and vegetables. A 2007 survey (Carroll et al.) of farmers using NEWA showed that use of pest forecasts saved an average \$19,500 in spray costs and prevented an average of \$264,000 in crop losses each year. The survey also found that vegetable growers comprised only 30% of users, a level we hope to increase through this project. We will update the NEWA vegetable models to improve the user interface and incorporate forecast weather. We will also investigate new vegetable models that could be added to NEWA.

To date, have updated the models for late blight, a serious pest of potato and tomato, the degree-day model for cabbage maggot, a pest of multiple crucifer crops, the onion maggot and disease models and are in the process of updating the tomato and potato disease models. We have decided to add germination models for six weed species in the next funding cycle.

Progress Summary: We have updated the onion maggot and disease models. The new onion maggot model is online (<http://newa.cornell.edu/index.php?page=onion-maggot>) and the disease models are being validated with scouting data provided by Christy Hoepting before going live. The tomato and potato disease models are currently being revised, with forecasts for all diseases presented on one page. We've met with Toni Di Tommaso and Art DeGaetano about the possibility of adding weed germination models to NEWA to take advantage of the new soil temperature model Art has developed. We've decided to go ahead with implementing those in 2016 and making them available for researchers to validate

Expected and Observed Impact/Outcome:	Expected impacts include increased use of vegetable forecast models and improved user experience with the new interfaces. This will result in improved pest management outcomes for users through better timing of pesticide applications while maintaining crop quality, and may decrease pesticide use, especially for disease pests in drier years.
Evaluation Approaches/Methods and Results:	Our proposed evaluation approach of using web statistics to compare use before and after model revisions is not possible because stats for individual models are not being collected. We will work to develop an alternate evaluation tool over the next year.
Diverse Audiences Reached:	The models are available online and are accessible by any English - speaking audiences, but we are not able to track audience diversity.
Multi-State Activities:	
Publication(s):	None
Communication(s):	This year the onion maggot model has been implemented on the NEWA web site: http://newa.cornell.edu and the others will follow once completed/validated.
Presentation(s):	Late blight forecasts available on NEWA. Late blight Decision Support System training 3/10/15. 15 minutes, invited speaker. Attended by 10 growers and consultants.
Project Conclusion:	
Other External Funding to Continue:	